Response Under 37 C.F.R. §1.116
Expedited Examining Procedure
Examining Group 3600

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claim 1 (Currently Amended): An apparatus for restricting axial flow through the clearance between a rotating shaft and a seal stator and providing effective damping to improve rotor stability, comprising:

an abradable labyrinth seal and swirl-reversal vanes upstream of the labyrinth seal ~~comprising a plurality of teeth and a smooth cylindrical abradable surface having a diameter less than the outer diameter of the teeth and providing a clearance at the tip of the teeth~~ wherein the shaft comprises a first toothed axial section having a plurality of annular teeth, a second upstream toothed axial section having a few annular teeth from one to three and a section therebetween having a cylindrical surface of diameter less than the outer edge of the teeth of the toothed sections, wherein there is a smooth cylindrical abradable coating on the surface of the stator seal radially outward of the first toothed section having a diameter less than the outer diameter of the teeth in the first toothed axial section, the swirl-reversing vanes being fastened to the stator between the toothed sections.

Claims 2 and 3 (Cancelled.)

Claim 4 (Currently Amended): The apparatus according to claim 1 ~~or 2~~, wherein the vanes have a generally v-shape with a generally v-shaped slot therebetween, the apex of the slot being circumferentially pointed in the direction of shaft rotation whereby the axial gas flow swirling in the rotational direction of the shaft enters the slots and is redirected to exit swirling in the direction against the rotation of the shaft.

Claim 5 (Original): The apparatus according to claim 4, wherein the vanes have an arcuate shape and the top of the arc is pointed in the direction of rotation of the shaft.

Claim 6 (Original): The apparatus according to claim 4, wherein the vanes have tapered ends.